

the meantime my only concern was to introduce this undoubtedly interesting little freshwater Medusa into literature, under a designation and description which would enable it to be re-identified, and so I must search out for it among its companions the best possible position according to the knowledge of it which we at present possess.

Leptomedusæ.

Thaumantida.

Gen. nov. *Halmnomises* (from ἄλμη, saltwater, and μισεῖν, to hate).

Sp. nov. *lacustris*.

Without marginal bulbs, cirrhi, or marginal vesicles. Umbrella hemispherical, 16-18 (? 24) tentacles, with gentle bulbous thickened bases, on the outer side of each of which an ocellum (simple ring of pigment). Velum thin, but broad; manubrium powerful, with broad base, bluntly quadrangular; mouth without lobes, cruciform, the four clefts in the direction of the angles. Atrium small, but distinct. Four radial canals, greatly widened in the central three fourths of their length, projecting towards the sub-umbrella; beset at this point with frill-like gonads, owing to the development of which they become coiled. The last peripheral third of the radial canals narrow, running straight.

Size, 2-2½ millim., diameter of the bell. Colour hyaline, faintly yellowish. Gonads yellowish brown.

Locality: freshwater lagoon on the east coast of Trinidad, south of Mayaro Point, in a cocoa-nut plantation.—*Sitzungsberichte der Naturforscher-Gesellschaft bei der Universität Dorpat*, Bd. ix. Heft 2, 1891, pp. 282-288.

*On the Causes affecting Variations in Linaria vulgaris.*

By THOMAS MEEHAN.

Few subjects more deserve the attention of thoughtful students of biology than the extent of variation aside from the conditions of environment. Instructive papers bearing on evolution are continually appearing, the full value of which is impaired by the passing suspicion that the authors have not fully perceived how great is the innate power to vary, independent of any external influences. That environment or surrounding circumstances have considerable influence on the production of new forms may surely be admitted without detriment to a profound belief that very much more is due to a tendency to change implanted in the organism, the laws governing which the keenest scrutiny has hitherto been baffled in the effort to detect. It is possibly from this confession of ignorance that the advocates of change by environment have gained so much strength. He who has something tangible to please us has more power than he who has to confess that he does not know. Those of us who would not have conceded as much to environment as is frequently claimed for it, can only insist that change is evidently going on in order, and evidently in accordance with a regular plan; while if all claimed for environment were conceded to be sound, it would subject change to the mere chapter of accidents, and the harmony and the exact dependence of one thing on another, which everywhere prevails, could scarcely exist.

It has been my fortune to have to show that in many cases where variations have been charged to crossing by foreign pollen or by other "conditions of environment," it was extremely probable that the sole actor in the work was this unknown law of change: while I have shown in many monotypic species, or in species removed from all possibility of intercrossing with other species, that the variations are quite as wide as if there had been full opportunity for the supposed laws of environment to operate.

Here I will call attention to the interesting variations any one may find in an hour's walk among *Linaria vulgaris*, the common yellow toad-flax, in any district where the conditions are absolutely identical and the plant tolerably abundant. Let one gather in the walk any specimen that seems to be slightly different from another, and he will be amazed on comparing the handful to note how great the difference. The foliage does not vary much, but some of the most divergent flowers might pardonably be referred to distinct species, did not the intermediate forms show that they were all of one family. There are variations in colour and in form. In colour some are pale straw and others deep yellow, while the palate varies from deep orange to the faintest possible tinge of yellow. At times nearly all the corolla, except the palate, is white instead of the normal tint, and again are forms in which only the backs of the two upper segments are white. But the most interesting variations are in the form of the lower lip. This is trilobed. Sometimes the lateral lobes are so broad as to overlap each other, when the central lobe seems hardly noticeable. At other times they are so widely separated that the trilobed character is noticed at a glance. In some instances the central lobe is scarcely produced, in others it is large and broad, extending to the line of the lateral lobes.

What has environment had to do with these widely variant forms? The most diverse will often be found in proximity where no one could suggest any difference whatever in the surrounding conditions. It is an introduction from Europe, and has no close allies that any one could name as likely to influence its pollination. Indeed, if these were present, they would be inoperative, as the plant is here, and probably everywhere, a close breeder, as I noted years ago. The pollen-sacs burst before the corolla opens, scattering the fertilizing dust over its stigma, which is evidently influenced thereby before the wind or insects have had any chance to operate. The flowers can gain no advantage from any outside agency, usual with those where insects have some opportunity to bring in foreign pollen before it is too late.

Aside from all this is the fact that the plants in any one given locality but a few years ago sprang from possibly one, or at most a few progenitors, which, introduced by accident from Europe, escaped the cultivator's destructive hoe, and then spread, through its progeny.

There seems no escape from the deduction that the plant derives from some pre-natal influence power to vary greatly, without any regard to the long periods of time sometimes called for, and wholly independent of external influences.—*Proc. Acad. Nat. Sci. Philad.*, May 26, 1891, p. 269.